## IN THE CLAIMS

Please substitute the following set of claims for those currently of record.

1. (Currently amended) A method for modulating the activity of a calcium channel in a pre-determined region of excitable cells ~~of~~ in a mammal, the method comprising:

   contacting the excitable cells with a nucleic acid encoding a GEM protein having an amino acid sequence according to SEQ ID NO.: 1, such that 15%-25% of the excitable cells are transduced,

   or contacting the excitable cells with a nucleic acid encoding a variant ~~thereof~~ of said GEM protein comprising~~:~~ an amino acid substitution of glycine for tryptophan at position 269 of SEQ ID NO.: 1;

   ~~(a) an amino acid sequence at least 99% identical to SEQ ID NO.: 1;~~

   ~~(b) a C- or N-terminal deletion of between from 1 to 100 amino acids relative to the amino acid sequence of SEQ ID NO.: 1;~~

   ~~(c) an affinity for calmodulin that is reduced by at least 50% as determined by a standard calmodulin binding assay;~~

   the contacting being under conditions sufficient for the excitable cells to express the GEM protein or said variant thereof; and

   expressing the GEM protein or said variant thereof at a level sufficient to modulate the activity of the calcium channel.

2. (Previously Presented) The method of claim 0, wherein the region of excitable cells is associated with a specific biological function.

3. (Previously Presented) The method of claim 0 or 2, wherein the region of excitable cells has a specific anatomical designation.

4. (Previously Presented) The method of claim 0, wherein the pre-determined region of excitable cells is within the heart, central nervous system (CNS), or vasculature.

5. (Cancelled)

6. (Original) The method of claim 0, wherein the method further comprises inhibiting L-type calcium current ($I_{Ca,L}$) by at least about 10% as determined by a standard electrophysiological assay.

7.-19. (Cancelled)

20. (Previously Presented) The method of claim 0, wherein the nucleic acid is a recombinant DNA virus.

21. (Previously Presented) The method of claim 20, wherein the recombinant DNA virus is a recombinant adenovirus.

22. (Original) The method of claim 21, wherein the recombinant adenovirus comprises nucleic acid sequence comprising as operably linked components:

i) a sequence encoding the GEM protein or a variant thereof,

ii) at least one nucleic acid sequence adapted to facilitate site-specific DNA recombination using a recombinase, and

iii) at least one nucleic acid sequence providing an essential adenovirus function.

23. (Original) The method of claim 22, wherein the recombinase is Cre or Flp.

24. (Original) The method of claim 22, wherein the recombinant adenovirus further comprises the following nucleic acid sequences as operably linked components:

i) a first inverted terminal repeat sequence (ITR),
ii) a first lox P site,
iii) an adenovirus packaging sequence (.psi),
iv) a strong viral promoter,
v) a polyadenylation signal (An)
vi) a second lox P site, and
vii) a second inverted repeat sequence (ITR).

25. (Original) The method of claim 24, wherein the recombinant adenovirus further comprises an internal ribosome entry site (IRES).

26. (Original) The method of claim 25, wherein the recombinant adenovirus further comprises at lease one adenovirus early gene (E2 and E4) or a functional fragment thereof.

27. (Original) The method of claim 26, wherein the recombinant adenovirus further comprises sequence encoding a selectable marker.

28. (Original) The method of claim 27, wherein the selectable marker is an in-frame fusion encoding a fluorescent, phosphorescent, or chemiluminescent protein.

29. (Previously Presented) The method of claim 22, wherein the recombinant adenovirus further comprises the following operably linked components in sequence:

    i) a first inverted terminal repeat sequence (ITR),
    ii) a first lox P site,
    iii) a packaging sequence (.psi),
    iv) a cytomegalovirus promoter,
    v) sequence encoding the GEM protein or a variant,
    vi) an internal ribosome entry site (IRES),
    vii) a polyadenylation signal (An),
    viii) a second lox P site,
    ix) a sequence encoding the adenovirus early region 2 and early region 4 genes, and
    x) a second inverted terminal repeat sequence (ITR).

30. (Previously Presented) The method of claim 29, wherein the recombinant adenovirus has a size of between about 35 kilobases to about 40 kilobases.

31. (Original) The method of claim 21, wherein the recombinant adenovirus is administered to the mammal at a titre of between about $10^8$ to $10^{12}$ p.f.u.

32. (Previously Presented) The method of claim 1, wherein expression of the GEM protein or variant thereof encoded by the recombinant animal virus can be detected in the region from at least about 12 hours after the contact as determined by a standard GEM protein detection assay.

33. (Previously Presented) The method of claim 32, wherein the expression of the GEM protein or variant thereof is sufficient to modulate the activity of an L-type calcium channel from at least about 24 hours after contact with the virus as determined by a standard electrophysiological assay.

34. (Previously Presented) The method of claim 32, wherein the expression of the GEM protein or variant thereof is sufficient to modulate the activity of the L-type calcium channel from between about twenty-four (24) hours to about one (1) month after the contact with the virus as determined by the standard electrophysiological assay.

35.-41. (Cancelled)

42. (Previously Presented) The method of claim 41, wherein the pre-determined region of excitable cells is further defined as the atrioventricular (AV) node, sinoatrial (SA) node, or the Purkinje fibers (Bundle of His).

43.-45. (Cancelled)

46. (Currently amended) A method for modulating the activity of a calcium channel in a pre-determined region of excitable cells ~~of~~ in a mammal, the method comprising:

contacting the excitable cells with a nucleic acid encoding a GEM protein having an amino acid sequence according to SEQ ID NO.: 1, such that 15%-25% of the excitable cells are transduced,

~~or a variant thereof comprising:~~

~~(a) an amino acid sequence at least 99% identical to SEQ ID NO.: 1;~~

~~(b) a C- or N-terminal deletion of between from 1 to 100 amino acids relative to the amino acid sequence of SEQ ID NO.: 1;~~

~~(c) an affinity for calmodulin that is reduced by at least 50% as determined by a standard calmodulin binding assay;~~

the contacting being under conditions sufficient for the excitable cells to express the GEM protein or variant thereof; and

expressing the GEM protein or said variant thereof at a level sufficient to modulate the activity of the calcium channel;

wherein the calcium channel is an L-type calcium channel;

wherein the pre-determined region of excitable cells is in the ventricular or atrial chamber of the heart; and

wherein the L-type calcium channel activity is reduced in a pre-determined region of an atrium~~; and~~

~~shortening the QT interval by at least about 10% as determined by a standard electrophysiological assay.~~

47. (Currently amended) A method for modulating the activity of a calcium channel in a pre-determined region of excitable cells ~~of~~ in a mammal, the method comprising:

contacting the excitable cells with a nucleic acid encoding ~~a GEM protein having an amino acid sequence according to SEQ ID NO.: 1,~~

~~or~~ a variant ~~thereof~~ of a GEM protein having an amino acid sequence according to SEQ ID NO.: 1 comprising~~:~~ an amino acid substitution of glycine for tryptophan at position 269 of SEQ ID NO.: 1;

~~(a) an amino acid sequence at least 99% identical to SEQ ID NO.: 1;~~

~~(b) a C- or N-terminal deletion of between from 1 to 100 amino acids relative to the amino acid sequence of SEQ ID NO.: 1;~~

~~(c) an affinity for calmodulin that is reduced by at least 50% as determined by a standard calmodulin binding assay;~~

the contacting being under conditions sufficient for the excitable cells to express the GEM protein or said variant thereof; and

expressing the GEM protein or said variant thereof at a level sufficient to modulate the activity of the calcium channel;

wherein the calcium channel is an L-type calcium channel;

wherein the pre-determined region of excitable cells is in the ventricular or atrial chamber of the heart;

wherein the L-type calcium channel activity is reduced in a pre-determined region of an atrium~~; and~~

~~prolonging at least one of the PR interval or AH interval of the heart by at least about 10% as determined by a standard electrophysiological assay.~~

48. (Original) The method of claim 47, wherein the level of expression of the GEM protein or variant is not sufficient to prolong the HV interval of the heart detectably.

49.-76. (Cancelled)

77. (Previously Presented) The method of claim 1, wherein the mammal is a rodent.

78. (Previously Presented) The method of claim 1 wherein the mammal is a guinea pig.

79. (Previously Presented) The method of claim 1 wherein the mammal is a mouse.

80. (Previously Presented) The method of claim 1, wherein the mammal is a primate.

81. (Previously Presented) The method of claim 1 wherein the mammal is a human.

82. (Previously Presented) The method of claim 1, wherein the mammal is a pig.

83. (Cancelled)